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REPORT ON THE
REMOVAL OF UNDERGROUND
STORAGE TANKS

LONGVIEW FIBRE COMPANY

SEATTLE, WASHINGTON
FACILITY

FOR
LONGVIEW FIBRE COMPANY
P.O. BOX 639
LONGVIEW, WASHINGTON 98632

Prepared by
CH2M HILL

November 1987

USEPA SF



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UNDERGROUND STORAGE TANK REMOVALS
LONGVIEW FIBRE COMPANY
SEATTLE FACILITY

Three underground storage tanks were excavated and removed at the Longview Fibre Seattle facility during the week of August 3, 1987. The tanks consisted of one 12,000-gallon Bunker C tank, one 7,500-gallon diesel tank, and one 1,000-gallon fuel oil tank. This report is a summary of the removal operation. Photographs accompany the report.

Personnel

O'Sullivan Construction, Inc., performed the tank removals. Win Brown supervised the contractor crew. Leigh Starlin and John Polk of CH2M HILL observed the tank removals.

Lee Dorigan and Rich Koch of the Washington Department of Ecology (Ecology) were present during much of the field activities on August 4 and 5.

Bunker C Tank

The 12,000-gallon Bunker C tank located at the east end of the Longview Fibre property near an above-ground starch tank was removed on August 5, 1987. The tank was in unconsolidated silty sands and was resting in a concrete cradle. The composite sample was collected by combining equal portions of soil from several locations within the stockpiles of excavated material. The concrete cradle was left in place. No visible evidence of leaks or contaminated soils was encountered during excavation. Groundwater was encountered only in the deepest part of the excavation, approximately 15 to 20 feet from the surface. Screening of soils with an HNU photoionization detector also showed no indication of contamination. At the request of Ecology, a composite sample was collected of soils excavated from around the Bunker C tank. The sample was analyzed for total petroleum hydrocarbons. Upon approval of Ecology, the excavated area was backfilled with some of the excavated material and with clean backfill. The tank was inspected upon its removal; no holes, leaks, or broken seams were found. After cleaning by Northwest Enviroservices, Inc., the tank was taken to The Purdy Company, 2929 SW Florida, the waste fuel was removed by NW Enviroservice and taken to their Airport Way facility for treatment and disposal for scrap. Results of petroleum hydrocarbons of the composite soil sample indicated a concentration of 280 mg/kg (see attached laboratory report).

Chronology. Asphalt above the Bunker C tank was broken using a G-1000 Gradall and removed on Monday, August 3. Excavation continued that afternoon until the top of the tank

was exposed. Excavation proceeded on the tank on Tuesday, August 4. The tank was purged of vapors and approved for removal by the Seattle Fire Department Tuesday morning (personal communication, CH2M HILL and Dom Brenneman, August 5, 1987). By late morning, attempts at removing the tank had begun. Removal was hindered by slope stability problems and by a concrete cradle in which the tank rested.

That afternoon, attempts at removing the tank continued until a City of Seattle building inspector visited the site and requested a work stoppage at the Bunker C tank based on a perceived threat to the structural stability of the nearby starch tank. After considering the potential problems presented by leaving the area partially excavated or by removing the tank, the plant manager decided that proceeding with removal of the tank was the best option.

After a second vapor purging, the tank was pulled loose from its concrete cradle on Wednesday morning. Ecology approved backfilling of the hole with the excavated material as there was no visual evidence of leakage or contamination. As the tank was pulled away, soil was backfilled on the side of the hole near the starch tank. The hole was backfilled and water compacted. Although there was no visible evidence of chemical contamination, some of the excavated material was determined to be unsuitable for backfill because it contained pieces of wood. Therefore, the hole was filled primarily with clean imported backfill.

Diesel Tank

A 7,500-gallon tank that had been used to store gasoline and, most recently, diesel fuel was also removed on August 5, 1987. The tank was located beneath a reinforced concrete loading dock on the north side of the plant building. The tank was in unconsolidated silty sands, and the water table was encountered at a depth of about 4.5 feet. Discolored soil was encountered above and below the tank. Only the quantity of soil necessary to remove the tank was excavated, leaving some potentially contaminated soil in place the excavation was approximately 8 to 12 feet deep.

Discolored soils were screened using a HNU portable photo-ionizer for detection of organic gases. Discolored excavated soils that registered higher than 5 ppm on the HNU were retained on a bermed visqueen¹ base while they remained onsite and, as directed by Ecology¹ and approved by Seattle-King County Department of Public Health (personal communication, CH2M HILL with Wally Swofford, Seattle-King County

¹This procedure was given to CH2M HILL as a standard procedure by Lee Dorigan, Ecology Northwest District during a previous tank removal project (July 17, 1987).

Department of Public Health, and Mel Andrieson, Cedar Hills Landfill August 5, 1987), were taken to the King County Cedar Hills Landfill for disposal.

Because discolored soils were found in the saturated zone of the soil column and hydrocarbons were visible on groundwater that seeped into the excavation, Longview Fibre decided that further investigation of the area should be addressed via groundwater monitoring. Ecology agreed that no samples of soil from this excavation would be collected and that groundwater would be monitored to determine whether fuel constituents were in groundwater. Northwest Enviro-services, Inc., removed groundwater that accumulated in the hole by tanker truck. Pumped groundwater was taken to Northwest Enviro-services Airport Way facility where the water would be sampled, treated, and discharged or disposed in accordance with applicable federal, state, and local regulations. After cleaning by Northwest Enviro-services, Inc., the tank was taken to The Purdy Company at 2929 SW Florida for scrap value.

Chronology. Initial work on the diesel tank began Monday morning, August 3. The reinforced concrete loading dock above the tank was broken using a rubber-mounted drop hammer. A concrete sump surrounding the fill pipe contained standing water with some diesel on it. This was pumped into the tank before the sump was removed. This material was later removed during tank cleaning. In the afternoon preliminary excavation was done.

Excavation continued at this tank on Tuesday morning, August 4. The tank was purged of vapors and approved for removal by the Seattle Fire Department (personal communication, CH2M HILL with Dom Brennenman, Seattle Fire Department, August 4, 1987) Tuesday afternoon.

On August 5, Wednesday morning, excavation proceeded at this tank. Discolored soil screened by HNU was placed on plastic sheeting near the excavation area. Ecology arrived at mid-morning to observe operations. Excavated soils were piled on the north and south sides of the excavated area. Slope instability caused undercutting of the reinforced concrete loading dock surrounding the tank. This eventually resulted in a portion of the dock breaking off. After a second vapor purging, the tank was removed. Because of the potential for additional cave-ins overnight, some of the excavated material was placed back in the hole after the tank was removed to stabilize the excavated area until sufficient clean fill could be brought in the following day to backfill.

On Thursday, August 6, the excavated material that had been placed back in the hole was removed, and accumulated water was pumped out. The hole was backfilled with clean granular fill. The concrete around the excavated area was saw-cut to

remove parts of the dock that had been undercut by the excavation. The surface of the loading dock was restored with wire-mesh-reinforced concrete.

Heating Fuel Oil Tank

A 1,000-gallon fuel oil tank was removed on August 5, 1987. Longview Fibre records indicated that the tank was 600 gallons in volume. However, once it had been excavated, it was determined by the tank dimensions (approximately 4 feet in diameter by 12 feet in length) that it was a 1,000-gallon tank. It was located at the west end of the building beneath a reinforced concrete loading dock. The tank was in unconsolidated silty sands. The excavation was approximately 10 to 12 feet in total depth. There was a 12- to 18-inch concrete slab resting on top of the tank.

Some discolored soils were encountered above the tank. Discolored soils were screened using an HNU portable photo-ionizer for detection of organic gases. Discolored excavated soils that registered concentrations of more than 5 ppm on the HNU were segregated from clean soils and placed on plastic sheeting. The tank, when removed, was pitted and had corrosion holes at the ends along the seams. Discolored soils were also encountered along the bottom and sides of the excavated area. The extent of the discolored soil could not be determined through excavation without threatening the structural integrity of the building; so some stained soil was left in place.

A groundwater seep was observed entering the excavated area at a depth of approximately 5 to 6 feet through discolored soils. Hydrocarbons were visible in groundwater seeping ^{from where} into the hole. However, water did not accumulate in the hole to the extent that pumping was needed before backfilling. Because visible hydrocarbons were observed in the groundwater seep and some discolored soils were left in place, Longview Fibre decided to perform further investigation by groundwater monitoring. Ecology agreed to groundwater monitoring of this area and did not request soil samples from this excavation (personal communication CH2M HILL and Lee Dorigan, Ecology, August 5, 1987). Excavated material that had been retained on plastic sheeting, as directed by Ecology and approved by Seattle-King County Department of Public Health (personal communications CH2M HILL and Wally Swofford and Mel Andriesen, Cedar Hills Landfill, August 5, 1987), was hauled to the King County Cedar Hills Landfill. The hole was backfilled with clean imported granular fill and clean excavated material, and the surface restored with reinforced concrete. The tank, was cleaned by Northwest Enviro-services, Inc., and waste oil was taken to their Airport Way facility.

Chronology. The concrete above the heating fuel oil tank was broken by a rubber-mounted drop hammer and removed on Monday, August 3. Initial digging below the surface of the loading dock did not encounter the tank surface but did reveal a concrete slab covering the tank. On August 4 the concrete slab above the tank was removed after it was broken up by a jack hammer. The tank contained 6 to 8 inches of oil, which was pumped out before removing the tank to prevent possible spillage. The oil was taken to Northwest Environmental Services, Inc., facilities for sampling, treatment, and disposal in accordance with applicable federal, state, and local regulations. The tank was purged of vapors and approved by the Seattle Fire Department (personal communication CH2M HILL and Dom Brenneman, August 5, 1987) for removal Tuesday morning.

Excavation continued around the tank on August 5. Ecology observed some of the removal operations and visually assessed the soil discoloration and the groundwater seep. The tank was removed after a second vapor purging. The hole was filled with granular backfill and clean excavated material, and the surface was restored with reinforced concrete.

Further Investigation

Excavation and removal of the diesel and heating fuel oil tanks revealed discoloration of soils surrounding the tanks and visible hydrocarbons in groundwater seeps. Longview Fibre plans to install a minimum of three monitoring wells on the property to investigate groundwater further. Wells will be sampled and analyzed for total petroleum hydrocarbons, benzene, toluene, and xylene.



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REPORT TO: LONGVIEW FIBRE
CH2M HILL/SEATTLE
S24054.A0
ATTENTION: LEIGH STARLIN
SAMPLE DESCRIPTION: SOIL
DATE OF SAMPLE: 8/5/87

REFERENCE NUMBER: 17898
PAGE 1 OF 1
DATE: 8/28/87
PHONE:
SAMPLED BY: CLIENT
DATE RECEIVED: 8/7/87

TEST UNITS SAMPLE	TOTAL FUEL HYDROCARBONS (DIESEL) mg/kg
LF01080587	280

COMMENTS: mg/kg = milligrams per kilogram

The information shown on this sheet is test data only and
no analysis or interpretation is intended or implied.

APPROVED BY:

Brian L. Smith